

**WHAT IS CLAIMED IS:**

- 1           1.       A check valve for micro electromechanical structure devices, said check  
2 valve being connectable to a system being charged with pressurized fluid and  
3 comprising:
- 4           a)       a valve body having a fluid inlet conduit and a fluid outlet conduit;  
5           b)       a valve chamber interposed between said fluid inlet and fluid outlet  
6 conduit in fluid flow communication, a valve seat being formed between  
7 said valve chamber and said fluid outlet conduit;  
8           c)       a fluid bypass channel connecting said fluid inlet conduit and said valve  
9 chamber;  
10          d)       and a freely movable valve member being located in said valve chamber,  
11 said valve member being displaced into a first valve-open position within  
12 said chamber by said pressurized fluid flowing through said bypass  
13 channel for charging said system, and upon letdown of pressure upon  
14 said system having been charged, said valve member being displaced  
15 into contact with said valve seat in a second valve-closing position so as  
16 to inhibit fluid flow through said check valve and seal said system.
- 1           2.       A check valve as claimed in Claim 1, wherein said valve is self-sealing  
2 responsive to said valve member being moved into contact with said valve seat.
- 1           3.       A check valve as claimed in Claim 1, wherein said valve comprises a  
2 permanent component of said system upon pressure letdown thereof in that said  
3 valve member is maintained in a sealing relationship with said valve seat.
- 1           4.       A check valve as claimed in Claim 1, wherein said valve member  
2 comprises a plug member which is slidable within said valve chamber between  
3 said first position in which said bypass channel enables fluid flow  
4 communication between said valve chamber and said fluid outlet conduit to

5 facilitate filling said system and said second position in sealing engagement  
6 with said valve seat so as to inhibit fluid flow through said check valve.

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1 5. A check valve as claimed in Claim 1, wherein said pressurized fluid  
2 comprises a supercritical fluid for a hydraulic system.

1 6. A check valve as claimed in Claim 5, wherein said hydraulic system is a  
2 component of a heating and cooling or pumping arrangement.

1 7. A check valve for micro electromechanical structure devices, said check  
2 valve being connectable to a system being charged with pressurized fluid and  
3 comprising:

4 a) a valve body having a fluid inlet conduit and a fluid outlet conduit;  
5 said fluid inlet and fluid outlet conduit being arranged in a fluid flow  
6 communication; a valve seat being formed between said fluid inlet  
7 conduit and said fluid outlet conduit;  
8 b) and a valve member located between said inlet and outlet conduits being  
9 actuatable into a first valve-open position to enable pressurized fluid to  
10 flow through said valve for charging said system, and upon letdown of  
11 pressure upon said system having been charged, said valve being  
12 actuated into contact with said valve seat in a second valve-closing  
13 position so as to inhibit fluid flow through said check valve and to seal  
14 said system.

1 8. A check valve as claimed in Claim 7, wherein said valve is self-sealing  
2 responsive to said valve member being actuated into contact with said valve seat.

1 9. A check valve as claimed in Claim 7, wherein said valve comprises a permanent  
2 component of said system upon pressure letdown thereof in that said valve member is  
3 maintained in a sealing relationship with said valve seat.

1 10. A check valve as claimed in Claim 7, wherein said valve member comprises a  
2 flexible plate which is tiltable between said first position in which said valve enables  
3 fluid flow communication between said fluid inlet conduit and said fluid outlet conduit  
4 to facilitate filling said system and said second position in sealing engagement with said  
5 valve seat so as to inhibit fluid flow through said check valve.

1 11. A check valve as claimed in Claim 7, wherein said system comprises a hydraulic  
2 system, and said pressurized fluid is a supercritical fluid.

1 12. A check valve as claimed in Claim 11, wherein said hydraulic system is a  
2 component of a heating and cooling or pumping arrangement.

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1 13. A check valve as claimed in Claim 7, wherein said fluid inlet conduit comprises  
2 a channel which is narrower than said fluid outlet conduit.